

Appln. No. 10/009,504

Attorney Docket No. 10541-824

I. Listing of Claims

1. (Currently Amended): A tube with a flattened cross section for conveying a radiator coolant through a heat exchanger of an motor vehicle radiator, the tube comprising two major opposing walls with internal projections, the distance between the opposing walls defining a width, the projections extending into the internal cross-sectional area of the tube to divert the flow of radiator coolant along the tube to enhance heat exchange from the radiator coolant and to promote laminar flow of the radiator coolant before the radiator coolant encounters subsequent projections, each projection extending across less than 30% of the width of the tube, and an area of the tube walls provided with the plurality of internal projections amounting to less than 7.5% of a total area of the tube walls, ~~some of the flow of coolant being diverted around the projections to enhance heat exchange from the fluid, the flow of coolant resuming laminar flow before encountering subsequent projections.~~

2. (Previously Presented): The tube as claimed in Claim 1, wherein the area of the walls having projections amounts to less than 7.5% of the total area of the tube walls and more than 1% of the total area of the tube walls.

3. (Previously Presented): The tube as claimed in Claim 1, wherein the area of the tube walls having projections amounts to less than 5% of the total area of the tube walls.

4. (Previously Presented): The tube as claimed in Claim 1, wherein the area of the tube walls having projections amounts to approximately 2.5% of the total area of the tube walls.

5. (Currently Amended): The tube as claimed in Claim 1, wherein the projections are in the form of dimples formed in the tube walls, the dimples having substantially equal dimensions in the direction of radiator coolant flow and transverse to the direction of flow.

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6. (Previously Presented): The tube as claimed in Claim 1, wherein the projections are arranged in groups and within each group, the projections are arranged on a line extending diagonally across the tube.

7. (Previously Presented): The tube as claimed in Claim 6, wherein the line of projections on one opposing wall extends in a diagonally opposite direction to the line of projections on the other opposing wall.

8. (Previously Presented): The tube as claimed in Claim 6, wherein the projections on one opposing wall are greater in number than the projections on the other opposing wall, and the projections on the one wall are offset across the width of the tube from the projections on the other opposing wall.

9. (Previously Presented): The tube as claimed in Claim 1, wherein the projections are in the form of indentations punched out from one surface of the tube to appear as projections in the internal cross-section of the tube.

10. (Previously Presented): The tube as claimed in Claim 1, wherein the projections are generally square or rectangular in plan view.

11. (Previously Presented): The tube as claimed in Claim 1 ~~any preceding claim~~, wherein the projections have a length greater than their width, and the length of the projections is set at an angle to the length of the tube.

12. (Previously Presented): The tube as claimed in Claim 1, wherein the depth of the projections is between 35 and 50% of the internal diameter of the tube.

13. (Currently Amended): A heat exchanger for a motor vehicle radiator having a heat exchange core comprising:
a plurality of parallel coolant tubes that convey radiator coolant;
heat exchanger fins separating the coolant tubes,

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each of the tubes having a flattened cross-section and two major opposing walls, the distance between the walls defining a width; and

a plurality of internal projections on the major opposing walls, the projections extending into the internal cross-sectional area of the tube to divert the flow of radiator coolant along the tube to enhance heat exchange from the radiator coolant and to promote laminar flow of the radiator coolant before the radiator coolant encounters subsequent projections,, each projection extending across less than 30% of the width of the tube, and an area of the tube walls provided with the plurality of internal projections amounting to less than 7.5% of a total area of the tube walls, ~~some of the flow of coolant being diverted around the projections to enhance heat exchange from the fluid, the flow of coolant resuming laminar flow before encountering subsequent projections.~~

14. (Cancelled)

15. (Previously Presented): The heat exchanger as claimed in Claim 13, wherein the area of the tube walls having projections amounts to less than 5% of the total area of the tube walls.

16. (Previously Presented): The heat exchanger as claimed in Claim 13, wherein the area of the tube walls having projections amounts to approximately 2.5% of the total area of the tube walls.

17. (Currently Amended): The heat exchanger as claimed in Claim 13, wherein the projections are in the form of dimples formed in the tube walls, the dimples having substantially equal dimensions in the direction of radiator coolant flow and transverse to the direction of flow.

18. (Previously Presented): The heat exchanger as claimed in Claim 13, wherein the projections are arranged in groups and within each group, the projections are arranged on a line extending diagonally across the tube.

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19. (Previously Presented): The heat exchanger as claimed in Claim 19, wherein the line of projections on one opposing wall extends in a diagonally opposite direction to the line of projections on the other opposing wall.

20. (Previously Presented): The heat exchanger as claimed in Claim 19, wherein the projections on one opposing wall are greater in number than the projections on the other opposing wall, and the projections on the one wall are offset across the width of the tube from the projections on the other opposing wall.

21. (Previously Presented): The heat exchanger as claimed in Claim 13, wherein the projections are in the form of indentations punched out from one surface of the tube to appear as projections in the internal cross-section of the tube.

22. (Previously Presented): The heat exchanger as claimed in Claim 13, wherein the projections are generally square or rectangular in plan view.

23. (Previously Presented): The heat exchanger as claimed in Claim 13, wherein the projections have a length greater than their width, and the length of the projections is set at an angle to the length of the tube.

24. (Previously Presented): The heat exchanger as claimed in Claim 13, wherein the depth of the projections is between 35 and 50% of the internal diameter of the tube.

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